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Adolescent physical self-perceptions, sport/exercise and lifestyle physical activity

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Abstract

Purpose – Domain and sub-domain physical self-perceptions have been associated with adolescent moderate intensity physical activity although the association with different types of adolescent moderate intensity physical activity remains unclear. This study seeks to examine the relationship between personal self-perceptions and adolescent sport/exercise and lifestyle moderate intensity physical activity frequency.

Design/methodology/approach – A total of 122, 13-to-14 year-old, English adolescents from Leeds, West Yorkshire (58 boys and 64 girls) had their personal self-perceptions, sport/exercise and lifestyle moderate intensity physical activity assessed.

Findings – No significant positive relationships were found between boys' personal self-perceptions and lifestyle moderate intensity physical activity. However, a range of weak ($r = 0.34-0.42$) but significant relationships ($p < 0.01$) were found between personal self perceptions and boys' sport/exercise frequency. In contrast, only perceptions of strength competence were significantly related to girls' sport/exercise frequencies ($r = 0.28$; $p < 0.05$), while all personal self perceptions scales were significantly related to girls' lifestyle moderate intensity physical activity ($r = 0.26-0.32$; $p < 0.05$).

Research limitations/implications – The use of correlation analyses by this study placed limitations on the extent to which cause-effect relationships were established. Furthermore, girls' sport/exercise was poorly distributed, which may have led to the non-significant relationship found between this activity type and personal self-perceptions. The presence of a significant relationship between these two variables should therefore not be discounted.

Originality/value – This study seems to be the first to investigate and identify variations in the personal self-perceptions – moderate intensity physical activity relationship relative to activity type. Although more research is required, findings have implications for practitioners aiming to tailor physical activity interventions to this group and researchers aiming to match specific correlates to different types of adolescent physical activity.

Keywords Adolescents, Sports, Exercise, Lifestyles

Paper type Research paper

Introduction

A recent report by the Chief Medical Officer for England identifies that adolescents gain a range of benefits from participation in moderate intensity physical activity

(Department of Health, 2004). Specifically, regular participation has been suggested to contribute to optimum growth and development (Malina *et al.*, 2004), ameliorate conditions such as obesity (Bar-Or *et al.*, 1998), develop and maintain optimal fitness and health (Armstrong and Welsman, 1997) and positively influence activity participation across the life span (Pate *et al.*, 1998).

However, studies including adolescents have reported low levels of moderate intensity physical activity in British youngsters. Using four days of heart rate monitoring, a study by Sleaf and Tolfrey (2001) found that on average, 79, 9-to-12 year-olds did not fulfil the optimal health-related physical activity recommendation of an hour of moderate intensity physical activity per day. Furthermore, using self-report in a large sample ($n = 8067$) of 11-to-15 year olds, the Health Survey for England found that 14-17 per cent of boys and 20-35 per cent of girls achieved less than 30 minutes moderate intensity physical activity per day over a seven day period (Sproston and Primatesta, 2002).

The benefits of regular physical activity and the need to encourage participation through informed intervention have stimulated research into factors that influence young people's moderate intensity physical activity. These factors have typically been investigated using correlation analyses and are therefore referred to as correlates of physical activity. In an extensive review of the extant literature, Sallis and colleagues (2000) identified a range of correlates that, within the psychological/cognitive domain include physical self-perceptions

Personal self-perceptions are self-referent statements specific to the physical domain, which reflect the multitude of roles and attributes that make up the self (Fox, 1997). They range from the general to the more specific and include domain (physical self-worth) and sub-domain (sports competence, physical condition, body attractiveness and physical strength) level perceptions.

Domain and sub-domain personal self-perceptions have been identified in adolescents (Whitehead, 1995) and investigated in a number of studies linking personal self-perceptions to adolescent moderate intensity physical activity. Hagger *et al.* (1998) reported that personal self-perceptions successfully classified 60-70 per cent of British and Russian 13-to-14 year olds as either low or high active, while Crocker *et al.* (2000) found that personal self-perceptions predicted 27-29 per cent of physical activity variance in Canadians aged 10-to-14 years. The most recent study by Raudsepp *et al.* (2002) used correlation and multiple regression techniques to evaluate the association between personal self-perceptions and moderate intensity physical activity in Estonian 11-to-14 year olds. Findings showed domain and sub-domain personal self perceptions were significantly related to involvement in boys' and girls' moderate intensity physical activity, with weak correlation coefficients ranging from $r = 0.17$ (boys' perceptions of attractive body adequacy) to $r = 0.37$ (boy's perceptions of strength competence).

The use of correlation analyses and/or cross-sectional designs by these studies means that while the extent of association between personal self-perceptions and moderate intensity physical activity is described, causality can only be inferred. An additional limitation rests with the failure to differentiate between different types of moderate intensity physical activity. Physical activity is a complex behaviour, which takes place within different contexts. For example, contemporary guidelines for adolescents advocate moderate intensity physical activity through either

sport/exercise or lifestyle activity (Department of Health, 2004). Sport/exercise consists of programmed, structured activities, which are either competitive or uncompetitive. Alternatively, lifestyle activity such as walking, climbing the stairs or cycling, are activities that are performed as part of everyday life. Given the differences between sport/exercise and lifestyle activity, assumptions regarding the generalised role of personal self perceptions should not be made, particularly in that the success of intervention depends on the extent to which strategies are tailored to those correlates associated with specific activity behaviours (Owen *et al.*, 2000).

The aim of this study was to evaluate whether personal self-perceptions varied in relation to participation in different moderate intensity physical activity types. To achieve this, the relationship between personal self-perception, sport/exercise and lifestyle moderate intensity physical activity was investigated in a sample of English adolescents from North Leeds, West Yorkshire.

Method

Participants

As part of an ongoing health, fitness and lifestyle project occurring between Leeds Metropolitan University and schools around the North Leeds area, a year group (total of 156 pupils; aged 13.2 ± 0.4 years) from an inner-city comprehensive high school was asked to participate in the study. A convenience sample of 134 pupils (66 boys and 68 girls), consisting of White (90 per cent), South Asian (8 per cent) and African-Caribbean (2 per cent) ethnic groups, agreed to take part. Adolescents signed a consent form prior to participation, which provided written information on the nature of the study. The written assent of a parent/guardian was also obtained.

Measures

Personal self perceptions assessment and analyses. Personal self perceptions were assessed using the Children's Physical Self-perception Profile (Whitehead, 1995). The inventory consists of 24 items and six scales that measure sub-domain perceptions of sport/athletic competence, physical condition competence, attractive body adequacy and strength competence, along with domain-level perceptions of physical self-worth and global self-worth.

The Children's Physical Self-perception Profile has been found to be a reliable and valid means of assessing adolescent personal self-perception. Using a sample of North American adolescents, Whitehead (1995) reported high reliability coefficients that ranged from 0.80 – 0.88 for boys and 0.80 – 0.90 for girls. Both Crocker *et al.* (2000) and Eklund *et al.* (1997) used confirmatory factor analyses to assess the construct validity of the inventory in Canadian and North American adolescents respectively. Both studies reported good factorial validity (0.51 – 0.82 and 0.53 – 0.76 respectively). All three studies provide support for the hierarchical, global-specific relationship between scales, while Whitehead (1995) provides support for concurrent validity in that physical fitness test scores were significantly correlated with relevant scales.

Participants completed the Children's Physical Self-perception Profile during the autumn term in a classroom setting, within groups of approximately 15-to-30. Verbal and visual guidance was given on how to answer questions using dummy items. A researcher was present throughout in order to give assistance if required. Following this, items were assigned a score from 1 to 4 and grouped according to their relevant

scale. Within each scale, scores were summed and averaged. This resulted in a total of six personal self-perceptions scores, representing the scales of sport/athletic competence, physical condition competence, attractive body adequacy, strength competence, physical self-worth and global self-worth.

Moderate intensity physical activity assessment and analyses. Four single days of activity data were collected (Monday, Wednesday, Friday and a Saturday) using a one-to-one interviewer-administered self-report called the Four-by-One-Day Recall Questionnaire (Cale, 1994). This occurred over the same autumn term as personal self-perceptions measurement, via a rolling programme of assessment, in groups of approximately 16-20 participants.

Collection of activity data occurred following the day in question. For example, activity behaviour that occurred on Saturday was recorded retrospectively on Sunday. Interviews were conducted by four trained researchers, who undertook data collection for four to five participants per session. Each interview lasted approximately 10-15 minutes and occurred at school, including Sunday sessions, where researchers and participants were provided with access to facilities for a morning period.

Interviewers asked respondents to recall the previous day's events using a weekday and weekend format. The weekday questionnaire segmented the day into before school, in school and after school sessions. The weekend questionnaire segmented the day into morning, afternoon and evening periods. Within each of these periods a checklist of activities was given. These ranged in nature from sport and exercise to transport and household-related activities. Along with activity frequencies, respondents were asked to recall duration in hours/minutes and "huff and puff" activity (higher intensity activity which causes harder breathing).

Using heart rate monitoring as a criterion, assessment of the reliability ($r = 0.62$) and validity ($r = 0.61$) of the Four-by-One-Day Recall Questionnaire has been limited to a single study (Cale, 1994). These values have been found to be superior to other adolescent self-report measures (Sallis *et al.*, 1993), but concerns have been expressed over the extent to which young people overestimate activity duration when self-report measures are used (Welk *et al.*, 2000). Data collected on a sub-sample of the adolescents who participated in this study ($n = 33$), indicated that, in comparison to heart rate monitoring, the Four-by-One day Recall Questionnaire overestimated moderate intensity physical activity duration by 40 per cent (mean difference of 20 minutes per day). Therefore, in order to avoid a potential confounding factor in analyses, moderate intensity physical activity was assessed using frequencies alone.

After completion of self-reports, each participant's activity frequencies were separated into sport/exercise (competitive team/individual-based activities or exercise undertaken as part of a training routine) and lifestyle (play, transport, occupational or housework-related activity) categories. Many activities were explicit in their nature and therefore easily classified. Others could fall in either category, depending on the context in which they occurred. For example, adolescents could either swim competitively, non-competitively as part of an exercise or training regime or recreationally with friends or family. This scenario also existed for cycling, dancing and running. If participants indicated participation in these activities, interviewers were instructed to enquire and note the context within which they occurred.

Following categorisation, activities were assigned a MET value using a compendium of physical activities developed by Ainsworth *et al.* (1993). This coding scheme enabled classification of activities by rate of energy expenditure based on

multiples of resting metabolic rate. Table I summarises the MET values assigned for all of those activities reported.

Following guidelines given by Cale (1994), the threshold for moderate intensity physical activity PA was set at >4.0 METs. Frequencies of sport/exercise and lifestyle moderate intensity physical activity, which occurred at or above this threshold were calculated separately for each day. These were then averaged to give mean frequencies for the four days of monitoring.

Statistical analyses

All statistical analyses were undertaken using SPSS 11.0 for Windows. A range of difference-related tests were first undertaken in order to evaluate a) the need for sex-specific analyses and b) comparability in the distributions of data sets.

An independent samples *t* test was used to assess sex-related differences in perceptions of sport/athletic competence, physical condition competence, attractive body adequacy, strength competence and physical self-worth. Due to the presence of outliers, a non-parametric Mann Whitney U test was used to evaluate differences in sport/exercise and lifestyle moderate intensity physical activity frequencies between boys and girls. Comparisons between sport/exercise and lifestyle moderate intensity physical activity for boys and girls were evaluated using a Wilcoxon signed ranks test. This test was also used to evaluate differences between the group's sport/exercise and lifestyle moderate intensity physical activity frequencies.

With respect to the main aim of the study, associations between personal self-perceptions and frequency of sport/exercise and lifestyle moderate intensity physical activity were assessed through Pearson product moment correlation. As a measure of self-perception not specific to the physical domain, global self worth was not included in any analyses. Alpha was set at $p < 0.05$.

Results

Of the 134 adolescents who agreed to take part in the study 122 (58 boys and 64 girls; White = 91 per cent, South Asian = 7 per cent and African Caribbean = 2 per cent)

Sport and exercise activities	MET (huff puff)	Lifestyle physical activities	MET (huff puff)
Badminton	4.5	Cycling	4.0
Ball games	5.0	Gardening	5.0
Basketball		Household	3.5 (4.5)
Boxing	6.0	Swimming	6.0
Cricket/rounders	5.0	Tag/chasing	5.0
Dancing	4.5	Games/play	3.0 (4.5)
Football		Walking	4.5
Golf	4.5	Dancing	4.0
Gymnastics	4.0		
Hockey	8.0		
Netball	6.0		
Rugby	8.0		
Tennis	7.0		
Volleyball	3.0 (4.0)		
Running/athletics	5.0		

completed both personal self-perceptions and physical activity measures. Mean personal self-perceptions scores for this group are shown in Table II. A comparison of personal self-perceptions scores using an independent samples *t* test revealed no significant differences between boys and girls.

Table III shows boys', girls' and the group's data set characteristics for sport/exercise and lifestyle moderate intensity physical activity frequencies. A Mann Whitney U test revealed significant differences between boys' and girls' sport/exercise ($z = 3.7$; $p < 0.001$) and lifestyle moderate intensity physical activity ($z = 2.0$; $p < 0.05$) frequencies. In comparison to girls, mean scores indicated boys participated in a higher frequency of sport/exercise. On the other hand, girls participated in a higher frequency of lifestyle moderate intensity physical activity. Differences found between boys' and girls' moderate intensity physical activity frequencies highlighted the need for subsequent sex-specific correlation analyses.

Comparisons using a Wilcoxon Signed Ranks test found differences for both sport/exercise and lifestyle moderate intensity physical activity frequencies in boys ($z = 3.2$; $p < 0.01$) and girls ($z = 2.3$; $p < 0.05$). Mean values indicated sport/exercise was higher than lifestyle moderate intensity physical activity frequency in boys, while lifestyle moderate intensity physical activity was higher than sport/exercise frequency in girls. High standard deviations relative to mean scores indicated that all moderate intensity physical activity frequencies were less well distributed than personal self-perceptions scales. However, skewness and kurtosis values showed acceptable normal distributions (± 2.0 ; Vincent, 1995). The exception was girls' lifestyle moderate intensity physical activity, which demonstrated a high level of kurtosis.

	<i>n</i>	Sport/athletic competence	Physical condition competence	Attractive body adequacy	Strength competence	Physical self-worth
Boys	58	2.9 \pm 0.7	3.0 \pm 0.7	2.7 \pm 0.8	2.9 \pm 0.6	2.9 \pm 0.7
Girls	64	2.7 \pm 0.6	2.9 \pm 0.5	2.5 \pm 0.6	2.7 \pm 0.6	2.9 \pm 0.6
Group	122	2.8 \pm 0.7	2.9 \pm 0.6	2.6 \pm 0.7	2.8 \pm 0.6	2.9 \pm 0.6

		Mean \pm SD	Range	Skewness	Kurtosis
Boys	Sport/exercise	5.1 \pm 4.4 1***3**	15.0	0.7	-0.5
	Lifestyle MPA	2.7 \pm 2.6 2*3**	12.0	1.3	1.8
Girls	Sport/exercise	2.4 \pm 2.9 1***4*	13.0	1.7	3.0
	Lifestyle MPA	3.5 \pm 2.6 2*4**	10.0	0.8	0.1
Group	Sport/exercise	3.7 \pm 3.9	15.0	1.2	0.7
	Lifestyle MPA	3.1 \pm 2.6	12.0	1.0	0.7

Notes: Significant differences (* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$) between: 1 Boys' and girls' sport/exercise; 2 Boys' and girls' lifestyle MPA; 3 Boys' sport/exercise and lifestyle MPA; 4 Girls' sport/exercise and lifestyle MPA

Table IV shows Pearson product moment correlation coefficients for boys, girls and the group. Significant positive associations were found between each personal self-perceptions score and the group's sport/exercise frequency ($r = 0.19-0.39$). No significant relationships were found between personal self-perceptions and frequency of lifestyle moderate intensity physical activity. With the exception of attractive body adequacy, significant positive associations were found between boys' personal self-perceptions and sport/exercise frequency ($r = 0.34-0.42$). A significant negative association was found between boys' perception of sport/athletic competence and lifestyle moderate intensity physical activity frequency. Perception of strength competence was the only personal self-perceptions score positively and significantly associated with girls' sport/exercise frequency ($r = 0.28$). Significant positive associations were observed between all personal self-perceptions scores and girls' frequency of participation in lifestyle moderate intensity physical activity ($r = 0.26-0.32$).

Discussion

Overview

This study investigated associations between personal self perceptions, sport/exercise and lifestyle moderate intensity physical activity, in order to evaluate whether personal self perceptions influence varied, in respect to different types of moderate intensity physical activity. In seeking to achieve this aim, it is important to recognise that correlation analysis and a cross-sectional design place limitations on the extent to which variations in personal self-perceptions can be directly linked to variations in moderate intensity physical activity. However, while the issue of causality should be viewed with caution, correlation analysis is a useful means of intimating that a mediatory effect is occurring.

The findings of this study suggest that, to some extent, personal self perceptions mediated the sample's moderate intensity physical activity. Further to this, the role of personal self-perceptions seemed to vary depending on activity type. For example, a range of significant, positive relationships were found between the group's personal

		Sport/athletic competence	Physical condition competence	Attractive body adequacy	Strength competence	Physical Self-worth
Boys	Sport/exercise	0.36**	0.34**	0.24	0.42**	0.37**
	Lifestyle					
Girls	MPA	-0.29*	-0.15	-0.18	-0.13	-0.13
	Sport/exercise	0.08	0.14	0.04	0.28*	0.08
Group	Lifestyle					
	MPA	0.26*	0.31*	0.30*	0.32*	0.29*
	Sport/exercise	0.26**	0.27**	0.19*	0.39**	0.26**
	Lifestyle					
	MPA	-0.02	0.06	0.02	0.07	0.07

Notes: * $p < 0.05$; ** $p < 0.01$

self perceptions and sport/exercise, while none were found for lifestyle moderate intensity physical activity frequency. It is unlikely that these particular findings were caused by variations in the characteristics of the group's sport/exercise and lifestyle moderate intensity physical activity data sets, given the similarity in range and distribution (Table III) and the fact that no significant differences were found between frequencies.

Competence motivation, sport/exercise and activity

It was assumed that personal self-perceptions would be significantly and positively correlated with sport/exercise. Furthermore, the competence-based sub-domains of sport/athletic competence, physical condition competence and strength competence, along with the domain of physical self-worth, were expected to show the strongest relationships. No significant positive relationships were expected between competence-based personal self-perceptions and lifestyle moderate intensity physical activity frequencies. All of these outcomes occurred when the group was assessed as a whole.

The rationale for these assumptions rested with the nature of the motivational process thought to underpin the personal self-perception -physical activity relationship. Authorities have argued that competence and athletic ability, specific perceptions subsumed within the personal self-perceptions hierarchy, play an integral part in moderate intensity physical activity motivation (Fox and Corbin, 1989; Biddle, 1997). Encapsulated by competence motivation theory (Harter, 1978), this perspective claims that individuals who are higher in perceived competence have higher expectations of success and achievement and thus invest greater levels of effort and persistence in their pursuit of a specific behaviour. Sport and exercise contexts relate well to this motivational process, given that competence in a range of skills and abilities plays an integral role in achieving success and achievement in these types of activities. The findings of Fox and Corbin (1989) support this position. Using canonical correlation analyses in young adults, this study found specific perceptual sub-domains to be related to involvement in particular types of sport/exercise. Two significant canonical functions emerged for male participants. The first of these ($r = 0.62$) consisted of weight training and perceptions of strength and physical condition, while the second ($r = 0.49$) consisted of ball sports and perceptions of sports competence.

In contrast, competence may not be that important as a motivational construct in lifestyle activity contexts. The nature of these activities places less importance on skill and ability and more emphasis on the practicalities of physical activity participation. Safe routes to school, for example, have been suggested to play an integral role in adolescent walking and cycling (Fox and Harris, 2003). The present study seems to be the first to assess the relationship between adolescent personal self-perceptions and lifestyle moderate intensity physical activity. However, while not specific to perceptual abilities, support can be found for the proposition that personal self-perceptions and lifestyle activities are not linked. Investigating the association between movement skills and different types of activities in 13-to-15 year-old Australian adolescents, Okely *et al.* (2001) showed jumping, catching and hitting skills did not significantly relate to non-organised activities such as brisk walking.

The effects of gender

Results for boys largely conformed to the expectation that personal self perceptions would be linked to sport/exercise, yet not associated with lifestyle moderate intensity physical activity. As the data in Table III show, boys' lifestyle moderate intensity physical activity frequencies were generally lower than those reported for sport/exercise and less normally distributed. These factors may have influenced the lack of relationship found between boys' personal self-perceptions and lifestyle moderate intensity physical activity. The extent to which this occurred is debatable however, given that both skewness and kurtosis values for boys' lifestyle moderate intensity physical activity were within the acceptable range for normal distribution.

It is interesting to note that perceptions of attractive body adequacy were not associated with boys' sport/exercise frequency. This perception is least related to the competence motivation process, in that items do not ask questions regarding competence in a specific skill or physical attribute, but rather refer to how people feel about their looks. Such a finding indirectly supports the supposition that competence motivation occurred in boys, while inferring that aesthetic perceptions played no motivational role in their sport/exercise frequency.

The remaining personal self-perceptions of sport/athletic competence, physical condition competence and strength competence, were significantly and positively related to boys' sport/exercise participation. Relationships were weak overall though, with the highest coefficient, which was strength competence ($r = 0.42$), only explaining 18 per cent of boys' sport/exercise variance. This may have been accurate given that correlation studies typically account for 15-20 per cent of young people's activity variance (Bourdeaudhuij, 1998). Alternatively, weak relationships may have been due to measuring sport/exercise behaviour via frequency rather than volume. This was a limitation of the study, in that while participation was captured, the quality of activity experience was not. An additional concern rests with the number of days measured and whether this was representative of physical activity behaviour in general. The logistics of the present study, in combination with the impact the study was having on timetable commitments, dictated that moderate intensity physical activity interviews occurred within a one week timeframe for each adolescent group, hence the measurement of three weekdays and a Saturday, rather than two weekdays and both Saturday and Sunday. Future personal self perceptions studies should aim to address these issues by assessing physical activity through a combination of objective and subjective measurement tools, over longer periods of time.

Personal self-perception, sport/exercise and lifestyle moderate intensity physical activity frequencies in girls

Examining physical self-structure in Canadian youngsters, Crocker *et al.* (2000) found boys' and girls' personal self-perceptions to be similar. However, despite being comparable the authors identified the need for sex-specific analyses given that the relationship between personal self-perceptions and other variables may diverge.

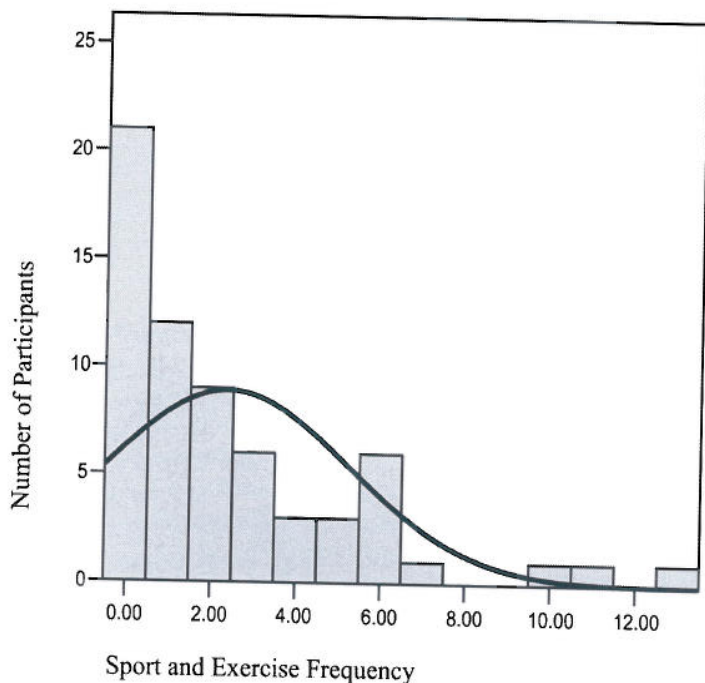
The present study provides evidence of why sex-specific analyses should be undertaken. In contrast to boys, all personal self-perceptions were significantly and positively related to girls' lifestyle moderate intensity physical activity PA, while only perceptions of strength competence were significantly and positively related to sport/exercise frequency. Perceptions of strength competence consistently appeared as

the strongest correlate of sport/exercise participation in this sample, although Raudsepp *et al.* (2002) found this to be the weakest perception linked to general moderate intensity physical activity participation in Estonian girls ($r = 0.17$).

The lack of association between girls' sport/exercise and perceptions of sport/athletic competence, physical condition competence and physical self-worth was unexpected and contradicted the assumption that all competence-based personal self perceptions would influence the sport/exercise frequency of both boys and girls. This finding could have been caused by poor normal distribution, given a high kurtosis value of 3.0 for girls' sport/exercise frequency (Table III).

Figure 1 shows the highly leptokurtic (or peaked) nature of this data set, with scores clustered around 0 – 2. Vincent (1995) stated that data sets with this type of distribution are characterised by poor variability. Furthermore Minium *et al.* (1993), discussing the interpretative aspects of correlation, stated that restrictions in the variability of any given variable entered into a correlation analysis, increases the likelihood of a low correlation coefficient. A possible explanation as to why the majority of competence-based personal self perceptions were not related to girls' sport/exercise may therefore rest with the poor level of variability found for girls' sport/exercise frequencies. Thus, the potential role competence motivation played in girls' sport/exercise frequency should not be dismissed.

The relationship found between perceptions of attractive body adequacy and lifestyle moderate intensity physical activity suggests that participation in activities such as recreational swimming or dance are influenced by girls' appearance and perceptions of body image. While not specific to lifestyle moderate intensity physical activity, Davis (1997) reported that females higher in body satisfaction were more



active than those whose body satisfaction was lower. Given the expectation that competence-based personal self perceptions would not relate to lifestyle-related activities, the weak significant relationships found between girls' sport/athletic competence, physical condition competence, strength competence and lifestyle moderate intensity physical activity are less easily explained.

It is possible that sport/exercise or lifestyle moderate intensity physical activity categories may not have been sensitive enough to separate competence and non-competence-based activities. Alternatively, the use of these categories may not have been an issue and it may have been that boys and girls held different perspectives regarding the nature of competence and lifestyle moderate intensity physical activity. For example, the boys in this sample may have perceived that physical condition competence was not an important prerequisite for cycling or brisk walking. Girls on the other hand may have thought the opposite. This possibility highlights the need for future qualitative-based research capable of supplementing quantitative findings. With respect to this study, the use of semi-structured interviews asking about the nature of competence and activity type would have provided valuable additional data to that collected via established quantitative tools such as the Children's Physical Self-perception Profile (Whitehead, 1995) or the Four-by-One-Day Recall Questionnaire (Cale, 1994).

Conclusions and future directions

The characteristics of this sample are highly specific in respect to age and geo-cultural background. This, in combination with the paucity of studies that have examined the relationship between personal self-perceptions and different activity types, means that findings should be generalised with caution. However, despite the need for further research, this study has demonstrated the importance of considering different activity contexts, given that variations were found in the relationship between personal self perception, sport/exercise and lifestyle moderate intensity physical activity. Indeed, differentiating between activity types was a strength of the study, in contrast to others in the area which have only examined the relationship between personal self perceptions and moderate intensity physical activity *per se* (Hagger *et al.*, 1998; Crocker *et al.*, 2000; Raudsepp *et al.*, 2002).

The extent to which variations were attributable to differences in the distribution of sport/exercise and lifestyle moderate intensity physical activity frequencies is debatable. Data sets for both girls and boys contained these variations. However, only girls' sport/exercise frequency demonstrated a distribution that was not normal and this may have adversely affected the extent of relationship found. Future studies need to examine whether the lack of relationship between personal self-perceptions and girls' sport/exercise is replicated in data sets with acceptable normal distributions. This may represent a significant challenge given the low frequency of sport/exercise typically found in girls (Myers *et al.*, 1996; Trew *et al.*, 1999).

Discounting the non-significant relationship between personal self-perceptions and girls' sport/exercise, findings for the group and for boys conformed to expectations that personal self-perceptions and the competence motivation process played a significant and positive role in sport/exercise frequency. The contrast found between boys' and girls' personal self perception-lifestyle moderate intensity physical activity relationship was unexpected and highlights the importance of undertaking sex-specific

analyses when evaluating young people's physical activity correlates. This difference also highlights the need for future qualitative-based research capable of examining the in-depth, subjective and complex interactions that occur between boys' and girls' perceptions of competence and physical activity type.

Finally, the value of correlate-based research rests with the identification of factors that influence physical activity. Interventions can then be tailored to reflect these factors. The modest relationships found by this study indicate that a personal self perception -based strategy aimed at encouraging competence should form part of a wider, holistic approach aimed at promoting boys' sport/exercise and girls' lifestyle moderate intensity physical activity. Positive physical activity experiences through mastery rather than performance-orientated climates have been identified as a means of enhancing/maintaining competence in young people (Whitehead and Corbin, 1997). With regard to the adolescents in the present study, the implications of the findings for intervention are not clear. This is due to issues regarding the poor distribution of girl's sport/exercise frequency and sex-related differences in the personal self perception -lifestyle moderate intensity physical activity association. More work is required if the role of competence motivation in different activities is to be fully understood in this sample.

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